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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Pearl Cohen Zedek Latzer, LLP
1500 Broadway
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New York, NY 10036

EXAMINER

CHANG, HANWAY

ART UNIT	PAPER NUMBER
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4183

MAIL DATE	DELIVERY MODE
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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/566,992	Applicant(s) TRIBELSKY ET AL.	
	Examiner Hanway Chang	Art Unit 4183	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 and 23 is/are rejected.
- 7) ☒ Claim(s) 22 and 24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 February 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/07/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: the inner surface 61 mentioned on page 20, line 21 and the quartz wall 60 mentioned on page 20, line 23. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Fig. 12 reference number 5 and Fig. 15 reference number 2. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the

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immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 recites the limitation "said disinfection device" in the fifth line of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

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only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 6-10, 12-13, and 15-21 are rejected under 35 U.S.C. 102(e) as being anticipated by McDonald et al. (US PGPub 2003/0155524, hereinafter McDonald).

Regarding claim 1, Fig. 1 of McDonald discloses at least one reactor 1 for the treatment of fluids with light radiation, the reactor comprising a tube or a vessel (3) (see paragraph [0033]) made of transparent material (see paragraph [0034]) and surrounded by air (see paragraph [0033]), and having a fluid inlet (30) (see paragraph [0031]), a fluid outlet (40) (see paragraph [0031]), and at least one opening or window adapted for the transmission of light into the tube. It should be noted that the transparent material used for the tube (3) is a type of window.

Further regarding claim 1, Fig. 1 of McDonald further discloses a light source (2/4) (see paragraph [0033]) external to said tube, said light source (2/4) including a light generator (2) and a reflector (4) (see paragraph [0033]) to reflect light generated by said light generator onto said window at angles of a predefined angle range. It should be further noted that the reflected light consistently enters the tube within an angle range is therefore predefined.

Regarding claims 2 and 17, McDonald discloses that the tube or the vessel (3) is made of quartz (see paragraph [0034]).

Regarding claim 3, Fig. 1 of McDonald discloses the tube or the vessel (3) is positioned inside a protective sleeve with an air gap in between (see paragraph [0034]).

Regarding claim 6, McDonald discloses the reactor comprising at least one additional tube or vessel made of transparent material wherein the transparent tubes

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are descending diameters and are positioned one inside another with gaps in between, about the same longitudinal axis, forming a multi core reactor (see paragraph [0041]). It should be noted that McDonald discloses the tube being arranged with two or more internal channels; therefore each channel must inherently have a descending diameter with respect to the original vessel.

Regarding claim 7, Fig. 1 of McDonald discloses the predefined angle range is related to a critical angle for obtaining total internal reflection of at least part of the light within the fluid (see paragraph [0033]). It should be noted that total internal reflection is caused by the reflector (4); therefore any angle is a critical angle which will cause total internal reflection.

Regarding claim 8, Fig. 1 of McDonald discloses the fluid outlet (40) is formed as a filling nozzle in a liquid filling apparatus. It can be clearly seen that the liquid from the first reservoir (31) is passed through the fluid outlet (40) which fills the second reservoir (41). Therefore, fluid outlet (40) is formed as a filling nozzle.

Regarding claims 9 and 20, Fig. 1 of McDonald discloses the fluid outlet (40) is formed as a water launcher in a washing apparatus. It can be clearly seen that the liquid is launched from the first reservoir (31) into the second reservoir (41) through the fluid outlet (40) via the force provided by the pump (36) (see paragraph [0031]).

Regarding claim 10, Fig. 1 of McDonald clearly shows that the tube (3) is longer than it is wide, therefore window inherently has a surface area equal to or bigger than an inner diameter of the tube between the inlet (30) and the outlet (40).

Regarding claims 12 and 18, Fig. 1 of McDonald discloses a faucet (36) in liquid communication with a fluid outlet of the reactor (see paragraph [0031]). McDonald discloses that the device is used to treat water in water-purification applications (see paragraph [0015]). It should be noted that the term “faucet” is defined as any device for controlling the flow of a liquid. Therefore, the pump (36) is a type of faucet.

Further regarding claim 18, it should be noted that water is inherently transparent to certain wavelengths of the light radiation.

Regarding claim 13, McDonald discloses that at least one of the fluid inlet (30) and fluid outlet (40) is in air communication with at least one air pump (see paragraph [0031]). McDonald discloses that the device is used for any material which is flow able or pump able where sterility is required or desirable (see paragraph [0015]). Therefore the disclosed pump is capable of being an air pump.

Regarding claim 15, Fig. 1 of McDonald discloses a reactor to accommodate a fluid (3) (see paragraph [0033]), the walls of which are made of a transparent material (see paragraph [0034], and the surrounding outside the wall is of a refractive index lower than that of the wall (see paragraph [0034]); generating light radiation externally to the reactor (2) (see paragraph [0033]); and reflecting the light radiation into the reactor (4) (see paragraph [0033]) such that light is transmitted through the fluid, and such that a major portion of light which leaves the fluid through its boundaries which the transparent wall is reflected back into the fluid or remains to shine along the transparent wall (see paragraph [0033]). It should be noted that McDonald discloses that the transparent wall is made of quartz and is surrounded by air which inherently has a lower

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refractive index than quartz. It should be further noted that the light that leaves the fluid through the boundaries of the transparent wall are reflected back into the fluid by the reflectors (4).

Regarding claim 16, Fig. 1 of McDonald discloses that the pump (36) is used to control the fluid to have a continuous flow during the irradiating process (see paragraph [0015]).

Regarding claim 19, Fig. 1 of McDonald discloses that the fluid within the tube has light radiation locked in total internal reflection due to the reflectors (4) (see paragraph [0033]) which is then launched from the fluid outlet (40) (see paragraph [0031]).

Regarding claim 20, McDonald does not explicitly disclose washing a container with the free flow jet. However, Fig. 1 of McDonald shows that the fluid flows into the second reservoir, which will inherently clean the reservoir to a degree due to the movement of fluids.

Regarding claim 21, Fig. 1 of McDonald discloses filling a bottle or a container (41) with the free flow jet (see paragraph [0039]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over McDonald as applied to claim 1 above, and further in view of Foret (US Pat. 5,832,361, hereinafter Foret).

Regarding claim 4, McDonald does not disclose the window is provided with an optical filter to block light of a predetermined wavelength spectrum from entering the reactor. However, in the same field of endeavor, Fig. 1B of Foret discloses having an optical filter (e.g. EMR filter) to filter certain predetermined wavelengths (500 nm and below) from entering the reactor (see col. 7, lines 8-17). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of McDonald by having an optical filter for the purpose of treating certain compounds in the fluid while not affecting others, as taught by Foret.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over McDonald as applied to claim 1 above, and further in view of Hallett et al. (US Pat. 6,707,048, hereinafter Hallett).

Regarding claim 5, McDonald does not disclose a light detector to detect light energy at one or more predetermined regions of the tube. However, in the same field of endeavor, Fig. 6 of Hallett discloses two light detectors (32 and 34) to detect light energy at two predetermined regions of the vessel, and a controller (38) to control one or more disinfection-related parameters of the device based on the detected light energy (see col. 12, lines 46-3). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of

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McDonald by having one or more light detectors for the purpose of having greater control over the treatment process when treatment is no longer viable (e.g. system needs cleaning, etc.).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over McDonald as applied to claim 1 above, and further in view of Saccomanno (WO 03/033413, hereinafter Saccomanno).

Regarding claim 11, a difference between McDonald and the claimed invention is the window is located such that the light enters the tube at a direction corresponding to a flow direction of the fluid between the inlet and the outlet. In the same field of endeavor, Fig. 2 of Saccomanno discloses the window (36) is located such that the light source (40) emits light into the vessel at a direction corresponding to the flow direction of the fluid between the fluid inlet (10) and the fluid outlet (50) (see page 5, lines 4-22). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of McDonald by having the window positioned such that the light source emits light into the vessel at a direction corresponding to the flow direction for the purpose of maximizing the illumination of the fluid.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over McDonald.

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Regarding claim 14, McDonald does not explicitly disclose the light source (2) as a mercury lamp. However, in a separate embodiment of the lamp (2), Figs. 2A and 2B of McDonald discloses the lamp is filled with mercury to cause mercury vapor discharge (see paragraph [0043]). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of McDonald by using a mercury filled lamp for the purpose of selecting a precise frequency of emitted energy as taught by McDonald.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over McDonald as applied to claim 19 above, and further in view of Chang (US Pat. 6,932,903, hereinafter Chang).

Regarding claim 23, a difference between McDonald and the claimed invention is dissolving into the liquid oxidizing agents, air, or gas, in order to enhance the disinfection process. However, in the same field of endeavor, Chang discloses dissolving ozone gas and water prior to exposing the mixture to UV light for the purpose of enhancing the disinfection effect (see col. 1, lines 14-21). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of McDonald by dissolving ozone gas into the liquid to enhance the disinfection process as taught by Chang.

Allowable Subject Matter

Claims 22 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 22, the prior art of record, either singularly or in combination, does not disclose or suggest the combination of limitations including, simultaneously evacuating the air rejected from the container by the liquid being filled, and suctioning it into a second reactor or into a second flow channel in the same reactor in which the liquid is irradiated.

Regarding claim 24, the prior art of record, either singularly or in combination, does not disclose or suggest the combination of limitations including, dry-disinfecting the containers to be filled by means of quartz rod inserted into the container opening and irradiating it with UV emitted from the rod.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanway Chang whose telephone number is (571)270-5766. The examiner can normally be reached on Monday to Thursday 7:30 AM till 5 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Landau can be reached on (571)272-1731. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew C. Landau/
Supervisory Patent Examiner, Art
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Hanway Chang
January 30, 2009
/H. C./
Examiner, Art Unit 4183